

Name _____

Date _____

Ellipses

Graph the following ellipses. Don't forget the foci.

1. $\frac{x^2}{25} + \frac{y^2}{9} = 1$

2. $\frac{x^2}{4} + \frac{y^2}{25} = 1$

3. $4x^2 + 25y^2 = 100$

4. $\frac{(x-3)^2}{25} + \frac{(y+2)^2}{9} = 1$

5. $\frac{(x+3)^2}{16} + \frac{(y-4)^2}{25} = 1$

6. $16x^2 + 4y^2 - 96x + 8y + 84 = 0$

7. $25x^2 + 4y^2 - 150x + 16y + 141 = 0$

8. $x^2 + 4y^2 - 2x + 40y + 85 = 0$

9. $x^2 + y^2 - 2x - 4y - 4 = 0$

Ellipse WS

1.

$$25 = a + c^2$$

$$16 = c^2$$

$$4 = c$$

$$C(0,0)$$

$$F(\pm 4, 0)$$

2.

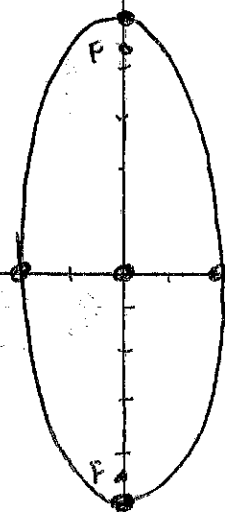
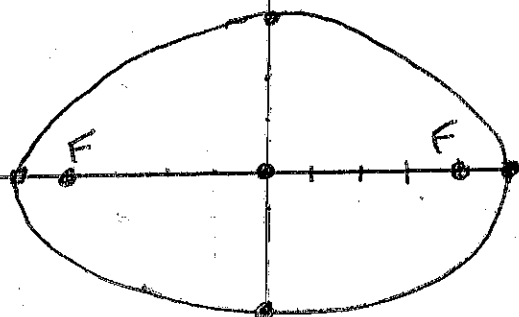
$$a = 5$$

$$b = 2$$

$$C(0,0)$$

$$F(0, \pm \sqrt{21})$$

$$\frac{25}{\sqrt{21}} \approx 4.6$$

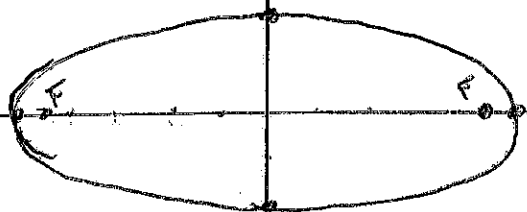


3. $\frac{x^2}{25} + \frac{y^2}{4} = 1$ same as #2 but H

$$c = \sqrt{21}$$

$$C(0,0)$$

$$F(\pm \sqrt{21}, 0)$$



4. $C(3, -2)$

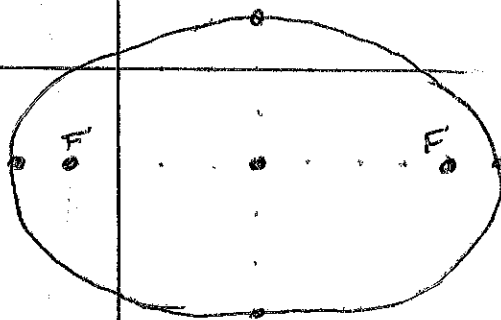
$$a = 5$$

$$b = 3$$

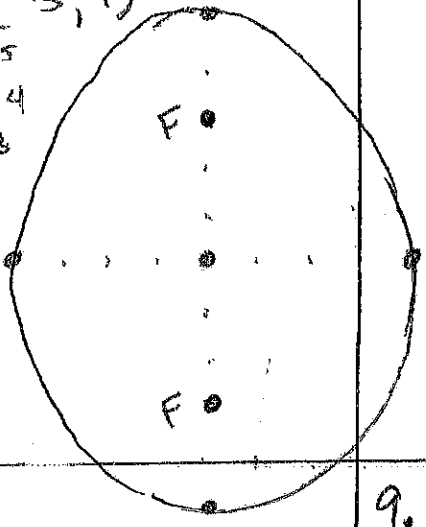
$$c = 4$$

$$F(7, -2)$$

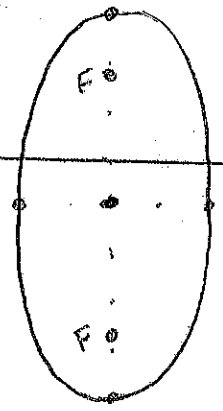
$$F(-1, -2)$$



5. $C(-3, 4)$ $F(-3, 7)$ $F(-3, 1)$
 $a=5$
 $b=4$
 $c=3$

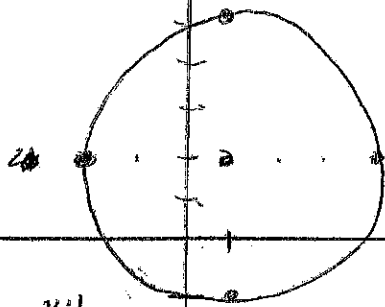


6. $16x^2 - 96x + 4y^2 + 4y = -84$
 $16(x^2 - 6x + 9) + 4(y^2 + 2y + 1) = -84 + 144$
 $16(x-3)^2 + 4(y+1)^2 = 64$
 $\frac{(x-3)^2}{4} + \frac{(y+1)^2}{16} = 1$
 $a=4$
 $b=2$
 ~~$c=3$~~ $C(3, -1)$
 $c = \sqrt{16-4} = 2\sqrt{3}$ $F(3, -1 \pm 2\sqrt{3})$

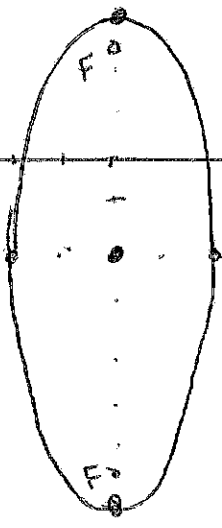


9. $x^2 - 2x + 1 + y^2 - 4y + 4 = 4 + 1 + 4$
 $(x-1)^2 + (y-2)^2 = 9$

circle



7. $25x^2 - 150x + 4y^2 + 4y = -141$
 $25(x^2 - 6x + 9) + 4(y^2 + 2y + 1) = -141 + 180$
 $25(x-3)^2 + 4(y+2)^2 = 100$
 $\frac{(x-3)^2}{4} + \frac{(y+2)^2}{25} = 1$
 $a=5$ $C(3, -2)$
 $b=2$ $F(3, -2 \pm \sqrt{21})$
 $c = \sqrt{25-4} = 4.5$



8. $x^2 - 2x + 1 + 4(y^2 + 10y + 25) = -85 + 100$
 $(x-1)^2 + 4(y+5)^2 = 16$
 $\frac{(x-1)^2}{16} + \frac{(y+5)^2}{4} = 1$
 $a=4$ $C(1, -5)$
 $b=2$ $F(1 \pm 2\sqrt{3}, -5)$
 $c = \sqrt{16-4} = 2\sqrt{3} \approx 3.46$

